

THE GENUS *OONOPS* (ARANEAE, OONOPIDAE)
IN PANAMA
AND THE WEST INDIES. PART 1

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This is the sixth paper in the series planned for publication on the various genera in the Family Oonopidae in Central America and the West Indies. The genus *Oonops* appears to include many more species than any other genus now believed to occur in the region under study at the present time. For this reason the treatment of the genus in this region will be divided into two or three separate papers. The present one will include all species at present known to occur in Panama, Trinidad, W. I. and Curaçao, Netherlands Antilles.

Again, I am taking this opportunity to express my appreciation for the continued aid and encouragement extended to me by the staff of the Museum of Comparative Zoology, Harvard University, over a period of many years. Grants GB-1801 and GB-5013 from the National Science Foundation have aided me in carrying on extensive collecting activities in Panama, Costa Rica, Florida and the West Indies during the years 1963-1968 and in continuing my studies in the Museum of Comparative Zoology during this period.

All types described in this paper together with my entire collection of specimens treated here will be deposited in the Museum of Comparative Zoology, Harvard University.

Genus *Oonops* Templeton, 1835

The type species is *Oonops pulcher* Templeton, 1835, by monotypy, based upon both males and females from Belfast, Ireland. Simon was the first to describe species belonging to this genus in the Western Hemisphere. Between 1891 and 1907 Simon described several species from St. Vincent, B. W. I., Brazil, Venezuela and Argentina. Since that time several additional species have been described from Bermuda, Florida, Dominican Republic, Puerto Rico, Texas, Mexico, Panama and Brazil. Dr. Petrunkevitch had one species from Panama in 1925 and in 1951 I recognized two additional species from the same region. Since 1951 the specimens assigned to this genus have been increasing with each of my collecting trips in Panama and other nearby regions.

As in my treatment of the genus *Stenoonops* (1969) I must con-

fess that I am well aware that some uncertainties still exist in my treatment of this genus. However, I feel compelled to recognize a total of fifteen species from Panama, Costa Rica, Trinidad, W. I. and Curaçao, Netherlands Antilles. Eleven of these species are regarded as new. The list of species recognized in this paper may be given as follows: *Oonops amacus* sp. nov.; *Oonops anoxus* sp. nov.; *Oonops donaldi* Chickering; *Oonops itascus* sp. nov.; *Oonops ornatus* sp. nov.; *Oonops pallidulus* (Chickering); *Oonops persitus* sp. nov.; *Oonops reticulatus* Petrunkevitch; *Oonops sativus* sp. nov.; *Oonops sicorius* sp. nov.; *Oonops tectulus* sp. nov.; *Oonops tenebus* sp. nov.; *Oonops trapellus* sp. nov.; *Oonops vestus* sp. nov.; *Oonops zeteki* Chickering. Several specimens have been left unplaced in any species because of their uncertain status. One species in the above list is from Curaçao, Netherlands Antilles, six are from Trinidad, W. I. and the remaining eight are from Panama and Costa Rica.

In addition to the general family characteristics, the features of the genus *Oonops* as observed in this study may be stated as follows: the size varies from about 1.2 mm to 2.26 mm with females usually somewhat larger than the corresponding males. The carapace is usually of moderate height with both height and general shape varying somewhat among the species; a few species have the carapace considerably more highly raised. There are six eyes in two rows in a fairly compact group; the posterior row is usually quite definitely recurved and somewhat wider than the anterior row and usually occupies most of the width of the carapace at that level. There are only small differences in the size of the three pairs of eyes. The chelicerae probably bear minute teeth on each margin of the fang groove but these are often difficult to observe. The maxillae and lip are usually conservative and without special modifications but there are occasional exceptions to this rule. The legs are moderately long and slender and have spines at least on the third and fourth legs but the spination is quite variable among the recognized species and often difficult to determine. The sternum is convex, only a little longer than wide; usually without special modifications but occasionally shows weakly developed lobes and grooves. The legs are most commonly 4123 in order of length but there is some variation in the order in certain species. The male palp usually has rather distinctive tarsal features but other segments are not highly modified. Abdomen: a dorsal scutum is absent; typically two obscure ventral scuta are discernible in the anterior third of the venter but in some species these are so indistinct that clear representation in drawings

is practically impossible; similar difficulties are encountered in respect to the epigynal areas of females and frequently these cannot be clearly represented in figures; small, subsurface, dark colored structures usually show more or less clearly just anterior to the bases of the spinnerets much as in *Stenoonops*.

Oonops reticulatus Petrunkevitch

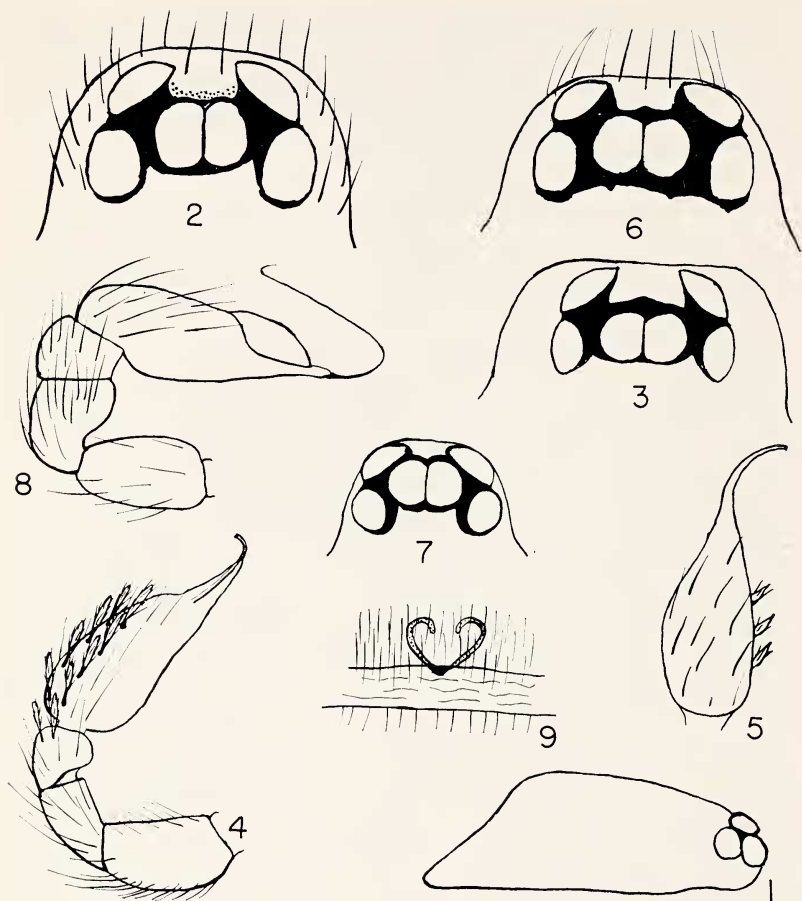
Figures 1-2

Oonops reticulatus Petrunkevitch, 1925: 98. The female holotype was from Panama City, Panama, but is now unavailable for study. Roewer, 1942: 278; Bonnet, 1958: 3192.

Oonopoides bryantae, — Chickering, 1951: 224, figs. 12-13.

No figures accompanied the original description and the female holotype was sectioned for the study of internal anatomy and, of course, was unavailable for examination in 1951 when I had but one male in my collection. Figure 1 shows the carapace of the male in profile and Figure 2 shows the eyes of the female; these specimens are from Corozal and Balboa, Panama Canal Zone, respectively. In both original descriptions cited above it was stated that true spines were lacking on the legs. Repeated examinations have now convinced me that there are actually true spines on the appendages although they are difficult to distinguish from numerous spiniform bristles and hairs. The ventral scuta in females are faintly outlined but the epigynal area is so indefinite and, apparently, variable in appearance that it seems impossible to provide reliable drawings of this region. The color pattern is highly variable among the specimens now assigned to this species; reticulation is very clear in some specimens but obscure in others; in some individuals the purplish color is subdivided into a series of irregular spots separated by yellowish areas.

Records. Two males are now in the collection from Corozal, Panama Canal Zone, January 4, 1958; a third male was collected in the vicinity of Turrialba, Costa Rica, Aug. 10, 1965. More than a dozen females from several localities in the Panama Canal Zone were taken in 1950, 1954, 1958, 1960 (W. J. Brown) and 1964; and also in Turrialba, Costa Rica, July-August, 1965. Two females from El Volcan, Panama, August, 1950 belong in this genus but their specific status is uncertain at present. It seems probable, however, that they will eventually be regarded as representing a new species.



Figs. 1-2. *Oonops reticulatus* Petrunkevitch. Fig. 1. Carapace of male; right lateral side. Fig. 2. Eyes of female from above. Figs. 3-6. *Oonops ornatus* sp. nov. Fig. 3. Eyes of male from above. Fig. 4. Left palp of male holotype; prolateral view. Fig. 5. Left palpal tarsus of holotype; dorsal view. Fig. 6. Eyes of female from above. Figs. 7-9. *Oonops tectulus* sp. nov. Fig. 7. Eyes of male holotype from above. Fig. 8. Left palp of male holotype; prolateral view. Fig. 9. Epigynal area of described female paratype from below.

***Oonops ornatus* sp. nov.**

Figures 3-6

Holotype. The male holotype is from Boquete, Panama, August 4-11, 1954. The name of the species is a Latin adjective suggested by unusual palpal tarsal decorations.

Description. Total length about 1.94 mm including extended spinnerets. Carapace about 0.81 mm long; 0.68 mm wide opposite second coxae where it is widest; about 0.32 mm tall; only slightly arched from PME to beginning of steep posterior declivity; shape of carapace in profile very similar to that of *O. reticulatus*; surface smooth and shining; with coarse, dark bristles along median and ocular regions; posterior border slightly overlapped by abdomen; no median thoracic groove or pit observed. Eyes: six as usual in a moderately compact group; posterior row occupies about seven-tenths of width of carapace at that level and is definitely recurved. Ratio of eyes ALE: PME: PLE = nearly 9:7:8 (some irregularities noted and pigment is somewhat irregularly distributed thus making it difficult to measure with the desired accuracy). ALE separated from one another by nearly their long diameter (Fig. 3); subcontiguous to PLE and separated from PME by nearly one fourth of their long diameter. PME contiguous to one another and separated from PLE by nearly half their radius. Clypeus very narrow with exact height obscure. Chelicerae: vertical, essentially parallel; apparently without special modifications. Maxillae distally narrowed and probably obscurely modified but details not determined. Lip: somewhat longer than wide; without special modifications. Sternum: very convex; longer than wide in ratio of about 12:11; obtusely rounded posterior end extended between bases of fourth coxae which are separated by about 1.3 their width; surface smooth and shining; only faintly grooved; with numerous long, stiff, dark, spiniform bristles; widest between second coxae but nearly as wide between first coxae. Legs: 4123 in order of length; it is difficult to distinguish between stiff, spiniform bristles and true spines but, as in *O. reticulatus*, after repeated examinations I have decided that we must recognize numerous, transparent spines on the legs; trichibothria are fairly prominent but their exact numbers and placement have not been determined. Palp: essential features shown in Figures 4-5; the distal end of the tarsus and the unusual, feathery hairs on the prolateral surface of the cymbium are the most distinctive features. Abdomen: regularly ovoid in shape; spinnerets essentially typical of the genus; the region anterior to the genital groove appears

to be slightly suggestive of an epigastric scutum but its outlines are very indistinct. Color in alcohol: carapace and legs above are a definite yellow color; sternum, mouth parts and lower surfaces of the legs are a lighter yellowish; abdomen light purplish brown with a distinct, irregular reticulation dorsally and laterally; the cardiac region is nearly white through the first quarter; the venter is nearly white; some variation in color pattern has been noted on the two paratype males.

Females. Several specimens are, apparently, either immature or dismembered to such an extent that an adequate description is regarded as impossible. These females are probably correctly matched with the males, however, because of color pattern, general anatomical features, the eyes (Fig. 6) and the decorative feathery hairs on the palps.

Diagnosis. The peculiar color pattern, the eyes and other general anatomical features seem to indicate a rather close relationship with *Oonops reticulatus* Petrunkevitch. The distinct features of the male palp definitely establish this as a new species.

Records. One paratype male was taken with the holotype and another male was taken in the same locality in August, 1950. Five or six damaged or immature females were also taken in the vicinity of Boquete, Panama, August 4-11, 1954.

***Oonops tectulus* sp. nov.**

Figures 7-9

Holotype. The male holotype is from St. Augustine, Trinidad, W. I., April 9, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length 1.43 mm, exclusive of the somewhat extended spinnerets. Carapace 0.66 mm long; 0.48 mm wide opposite interval between second and third coxae where it is widest; 0.20 mm tall; gently arched from PME to beginning of only moderately steep posterior declivity; surface smooth and shining except posterior declivity where there are very fine transverse corrugations; with a sparse supply of moderately long hairs mostly removed by handling; with no evidence of a median thoracic groove or pit. Eyes: six as usual in a moderately compact group; posterior row occupies nearly entire width of carapace at that level and is rather strongly recurved. Ratio of eyes ALE : PME : PLE = nearly 6 : 6.5 : 6. ALE separated from one another by nearly three-fourths of their long axis; subcontiguous to PME and slightly further removed from PLE

(Fig. 7). PME contiguous to one another for nearly one-third of their circumference and subcontiguous to PLE. Height of clypeus apparently equal to nearly one-fourth of the long axis of ALE but transparency makes accurate measurement difficult. Chelicerae: parallel; apparently without special modifications. Maxillae and lip: apparently typical of the genus. Sternum: convex; scutiform; with a deep excavation at junction with lip; only slightly longer than wide between second coxae where it is widest but nearly as wide between first coxae; only slightly lobed and not noticeably grooved; with a sparse coating of stiff bristles; squarely truncated between fourth coxae which are separated by eight-fifths of their width; second and third coxae nearly globose; first and second coxae somewhat more elongated. Legs: 4123 in order of length; slender, transparent spines are present especially on the third and fourth legs but these could easily be regarded as spiniform bristles. Palp: all segments short and broad except the tarsus which terminates in a long, lash-like embolus (Fig. 8). Abdomen: ovoid; with a weakly chitinized epigastric scutum and a narrow, transverse scutum just posterior to the genital groove; openings to book lungs and tracheal spiracle obscure. Spinnerets as usual in the genus with posterior pair the longest. Color in alcohol: carapace a medium brownish with three pairs of obscure more or less radiating streaks along lateral sides; with a conspicuous, somewhat diamond-shaped figure on the posterior declivity subdivided in the middle; only a moderate amount of black pigment in the ocular region; legs, mouth parts and sternum yellowish with variations. Abdomen: dorsum and lateral sides purple with cardiac region nearly white and with dentate margins; purple areas obscurely subdivided into angular areas; venter purplish except for the scutal areas which are yellowish streaked with purple; a light yellowish median stripe extends posteriorly three-fourths of the distance from the genital groove to the spinnerets which are yellowish.

Female paratype. Total length 1.61 mm. Carapace 0.66 mm long; 0.51 mm wide opposite second coxae where it is widest; 0.17 mm tall; very slightly arched from PME to beginning of posterior declivity; otherwise essentially as in male. Eyes: ratio of eyes $ALE : PME : PLE = 7.5 : 6.25 : 7$. ALE separated from one another by nearly three-fifths of their long axis. Clypeus appears to be practically eliminated because the ALE are set so low on the front of the carapace; otherwise essentially as in male. Chelicerae, maxillae and lip: all essentially as in the male holotype and without special modifications. Sternum: excavation at base of lip much less

than in male; sternal suture gently procurved; otherwise essentially as in male. Legs: 4123 in order of length as in male; slender, transparent spines seem to be present on legs as in male but it is difficult to distinguish between spiniform bristles and very slender spines. Abdomen: essentially as in male except that the scuta are even less distinct than in that sex; the epigynal area is very obscure but appears to exhibit a few faintly indicated distinctive features (Fig. 9); the female paratypes generally show no epigynal features of distinction. Color in alcohol: the conspicuous mark on the posterior declivity of the male is much less distinct here in the female; the purple areas on the abdomen are lighter in color and the reticulation is much clearer than in the male; otherwise essentially as in the male; considerable variation of the color pattern has been noted among the paratypes.

Diagnosis. This species also seems to be closely related to *Oonops reticulatus* Petrunkevitch. The features of the eyes, the obscure features of the epigynal area in the female paratype and, especially, the palpal tarsal features of the male establish it definitely as a new species.

Records. The described female paratype was taken on the same day and in the same locality as the male holotype. Several paratypes of both sexes, some immature, were collected in the same general locality April 5-8, 1964.

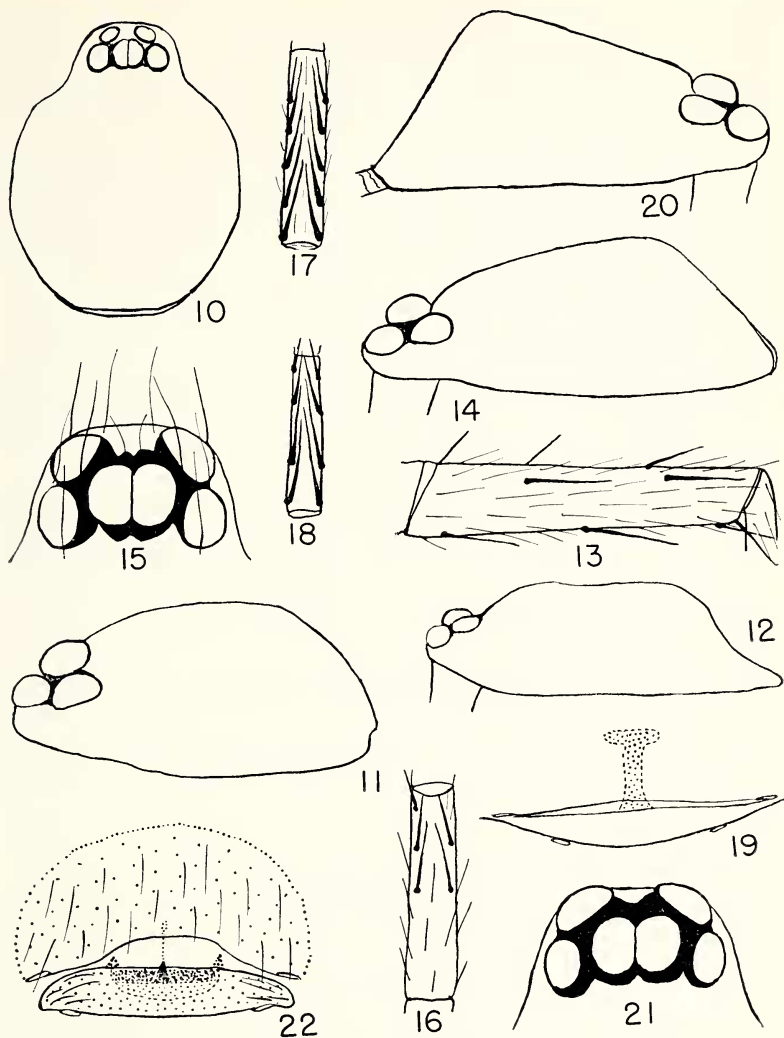
Oonops zeteki Chickering

Figures 10-11

Oonops zeteki Chickering, 1951: 229, fig. 17. The holotype female from Barro Colorado Island, Panama Canal Zone was taken in a Berlese funnel, July 1943-March 1944 by Dr. James Zetek and is now in the Museum of Comparative Zoology, Harvard University.

The posterior row of eyes is only slightly recurved in this species and the carapace has a somewhat different shape than usual (Figs. 10-11). The pedal spines are conspicuous and the epigynal area is without observed distinctive features.

One additional female taken on Barro Colorado Island by Dr. Zetek in a Berlese funnel in 1946 and another female taken in the same locality August 16, 1954 are definitely placed in this species. Three females taken in Summit Gardens, Panama Canal Zone, July 24, 1954 were for a time placed in this species but now their status is uncertain. The male remains unknown.



Figs. 10-11. *Oonops zeteki* Chickering. Fig. 10. Carapace from above. Fig. 11. Carapace; left lateral view. Figs. 12-13. *Oonops pallidulus* (Chickering). Fig. 12. Carapace; left lateral view. Fig. 13. Left fourth tibia; dorso-prolateral view. Figs. 14-19. *Oonops persitus* sp. nov. Fig. 14. Carapace of holotype; left lateral view. Fig. 15. Eyes of holotype from above. Figs. 16-18. First femur, tibia and metatarsus, respectively from below. Fig. 19. Epigynal area of holotype from below. Figs. 20-22. *Oonops amacus* sp. nov. Fig. 20. Carapace of holotype; right lateral view. Fig. 21. Eyes of holotype from above. Fig. 22. Epigynal area from below.

Oonops pallidulus (Chickering)

Figures 12-13

Oonopinus pallidulus Chickering, 1951: 222, figs. 10-11. The female holotype from Barro Colorado Island, Panama Canal Zone is in the Museum of Comparative Zoology, Harvard University.

In 1951 I had only the female holotype. Since that date numerous specimens, believed to belong here, have been added to the collection. Identification is often difficult, however, because of the obscurity of some important features especially of the epigynal area which seems to vary in appearance in different specimens. Repeated examinations have convinced me that spines are present on the legs (Fig. 13) but they are very inconspicuous as compared to those occurring on the legs of *Oonops persitus* sp. nov. for example. It now seems probable that I also have this species recorded from Jamaica, W. I. but the final decision in this matter must await more careful study of the available specimens. The male remains unknown.

Records. I now have about nineteen females assigned to this species. All of these have been collected in the Panama Canal Zone on Barro Colorado Island, in Summit Gardens or in the Canal Zone Forest Preserve on the following dates: July-August, 1954; January-February, 1958 and in May, 1964.

Oonops persitus sp. nov.

Figures 14-19

Holotype. The female holotype is from Barro Colorado Island, Panama Canal Zone, July 1-2, 1939. The name of the species is an arbitrary combination of letters.

Description. Total length, exclusive of the somewhat extended spinnerets 2.13 mm; including the spinnerets total length is 2.24 mm. Carapace nearly 0.77 mm long (somewhat overlapped by abdomen); nearly 0.66 mm wide opposite interval between second and third coxae where it is widest; nearly 0.33 mm tall; considerably raised and gently arched from just behind PME to beginning of fairly steep posterior declivity (Fig. 14); surface smooth and shining; with a row of five or six long, slender spinules along median region and with few hairs elsewhere. Eyes: six as usual in a moderately compact group; seen from above, posterior row recurved and occupies nearly the full width of the carapace at that level (Fig. 15). Ratio of eyes ALE : PME : PLE = nearly 8.5 : 8 : 8. ALE separated from one another by slightly less than their long axis; separated from PME by nearly three-eighths of their long axis and from PLE by less than one-eighth of their long axis. PME contiguous for nearly

one-third of their circumference and separated from PLE by a little more than one-eighth of their long axis. Height of clypeus equal to slightly less than one half the the long axis of ALE. Chelicerae: fairly robust; vertical; parallel; with no observed special modification. Maxillae and lip apparently quite typical of females of the genus; without observed special modifications. Sternum: moderately convex; nearly as wide as long; surface smooth and shining; without grooves or definite lobes; posterior end broadly rounded opposite bases of fourth coxae which are separated by nearly their width. Legs: 4213 in order of length; with conspicuous spines; first leg with spines as shown in Figures 16-18 (taken from paratype to avoid injury to holotype); some irregularities of spination noted among paratypes; second leg essentially as in first; third and fourth legs with several spines on femora, tibiae and metatarsi but much less conspicuous than on first and second legs; palp with several slender, inconspicuous spines. Abdomen: ovoid; widest about one-third from base to posterior end; six spinnerets typical of the genus with posterior pair the longest; with no evidence of a collulus; epigastric and narrow ventral scuta barely discernible; epigynal area obscurely distinctive (Fig. 19). Color in alcohol: carapace, sternum, legs and mouth parts yellowish with some variation; considerable black pigment in ocular area; abdomen light yellowish in general; with dorsal and lateral regions clearly reticulated into irregular polygons; on each side just in front of the anterior spinnerets there is a group of four or five minute more deeply colored yellowish bodies believed to represent the dark subsurface bodies typically seen in the same position.

Diagnosis. This species is believed to be closely related to *Oonops pallidulus* (Chickering). The conspicuous pedal spines, relative position of the eyes, shape of the carapace and the epigynal area seem to establish it as a new species.

Records. Ten female paratypes are in the collection from the following localities in the Panama Canal Zone: Summit, July, 1950; Barro Colorado Island, July-August, 1954; Summit Gardens, August, 1954; Canal Zone Forest Preserve, July, 1954 and December 1957.

***Oonops amacus* sp. nov.**

Figures 20-22

Holotype. The female holotype is from Simla, Trinidad, W. I., April 18, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length 1.91 mm, exclusive of the somewhat extended spinnerets. Carapace 0.74 mm long; 0.60 mm wide opposite posterior border of second coxae where it is widest; 0.33 mm tall opposite anterior border of third coxae where it is tallest; rises considerably from PME to beginning of steep posterior declivity (Fig. 20); surface smooth with a moderately well developed coat of erect, light colored hair; without a definite median thoracic fovea. Eyes: six in two rows in a fairly compact group; posterior row occupies nearly nine-tenths of width of carapace at that level and is moderately recurved (Fig. 21). Ratio of eyes $ALE : PME : PLE = 8 : 8.5 : 7$. ALE separated from one another by nearly five-eighths of their diameter, separated from PME by a little less than one-fourth of their diameter and barely separated from PLE. PME contiguous to one another for one-third of their circumference and separated from PLE by a fairly broad line. Height of clypeus probably about equal to the radius of ALE; clypeus with numerous spiniform bristles. Chelicerae: vertical; parallel; without special modifications. Maxillae and lip: apparently typical of the genus; close observation prevented by folded, fragile legs. Sternum: scutiform; convex; as wide as long; posterior end bluntly rounded and extended halfway between fourth coxae which are separated by slightly more than their width. Legs: 4213 in order of length; spines quite well developed but they are less conspicuous than in *Oonops persitus* sp. nov.; first tibia with about five pairs of ventral spines with some irregularities; first metatarsus with about four pairs of ventral spines also with some irregularities and with differences between right and left; second tibia with spines nearly like those on first tibia; about the same for the second metatarsus; third and fourth legs also with numerous spines on tibiae and metatarsi; palp with numerous slender spines especially on the tarsus; no claw observed on palpal tarsus. Abdomen: broad ovoid; with two rather weakly outlined ventral scuta as shown in Figure 22; spinnerets essentially typical of the genus; epigynal area obscure but apparently somewhat distinctive (Fig. 22). Color in alcohol: carapace, legs, sternum and associated parts all yellowish with variations; black pigment in ocular area essentially as shown in Figure 21; abdomen white with grayish, irregular, small spots showing through from within; scuta yellowish with variations; on the venter just anterior to the base of the spinnerets are two clusters of very small dots.

Diagnosis. Although relationships among species in this genus are very difficult to establish, this species appears to be closely related

to *Oonops pallidulus* (Chickering). The relative position of the eyes, the pedal spines, the shape of the carapace and the features of the epigynal area all seem to establish this as a new and distinct species.

Records. One female paratype was taken with the holotype; one female, on loan from the American Museum of Natural History, New York City, was taken in Arima Valley, Trinidad, W. I. 800-1200 ft. elevation, February 10-22, 1964 (Wygodzinsky & Rosen). The male is unknown.

Oonops donaldi Chickering

Figure 23

Oonops donaldi Chickering, 1951: 226, figs. 14-16. The holotype male from Barro Colorado Island, Panama Canal Zone is in the Museum of Comparative Zoology, Harvard University.

Only one male from Barro Colorado Island, Panama Canal Zone, June, 1950 has been added to the collection since the holotype was collected in 1936. Two females taken with this male appear to be immature and unfit for description.

Oonops itascus sp. nov.

Figures 24-26

Holotype. The male holotype is from Simla, Trinidad, W. I., April 23, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length 1.58 mm. Carapace 0.69 mm long; 0.57 mm wide opposite second coxae where it is widest; about 0.3 mm tall; rises immediately behind PME and continues a gradual rise to highest point opposite interval between third and fourth coxae and then descends steeply to posterior border; similar to that of *Oonops donaldi* Chickering in profile; with no evidence of a median thoracic pit or groove; with a sparse covering of dark hairs; surface smooth and shining. Eyes: six as usual in a compact group; posterior row recurved and occupies nearly the entire width of the carapace at that level (Fig. 24). Ratio of eyes ALE : PME : PLE = nearly 7 : 8 : 7. ALE separated from one another by nearly five-sevenths of their diameter; subcontiguous to PME and slightly separated from PLE. PME contiguous to one another and subcontiguous to PLE. Height of clypeus nearly equal to radius of ALE. Only a few inconspicuous bristles in ocular area. Chelicerae, maxillae and lip: all appear to be typical of the genus and without special modifications. Sternum: convex; scutiform; slightly the

widest between second coxae but nearly as wide between first coxae; surface without grooves, smooth and shiny; almost as wide as long; bluntly rounded at posterior end which extends midway between fourth coxae which are separated by nearly 1.5 times their width. Legs: 4213 in order of length; long and slender; true spines appear to be present on all legs; these are long, slender and transparent; many spiniform bristles and hairs are also present; fourth femur nearly as long as abdomen. Palp: very distinctive; the femur is much inflated; the patella is short and curved; the tibia is without special modifications; the tarsus with its bulb and associated structures is curiously modified (Fig. 26). Abdomen: ovoid; without special modifications; epigastric and ventral scuta faintly outlined. Color in alcohol: ocular area with a moderate amount of black pigment; cephalothorax, legs and mouth parts yellowish with varia-

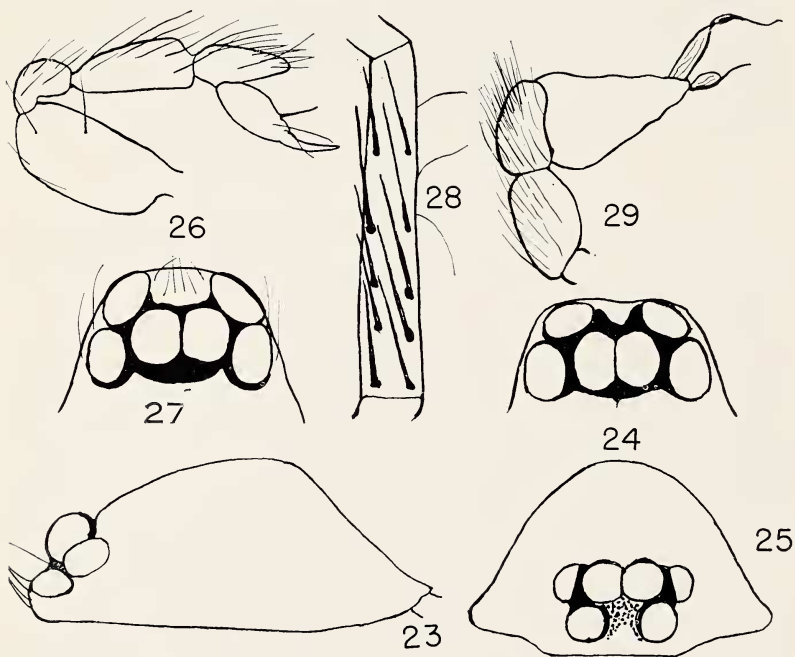


Fig. 23. *Oonops donaldi* Chickering; carapace of male; left lateral side. Figs. 24-26. *Oonops itascus* sp. nov. Figs. 24-25. Eyes of male holotype from above and from in front, respectively. Fig. 26. Left male palp; prolateral view. Figs. 27-29. *Oonops trapellus* sp. nov. Fig. 27. Eyes of male holotype from above. Fig. 28. Left second tibia; ventral view. Fig. 29. Left palp of male holotype; prolateral view.

tions; palps medium brown; abdomen very light yellowish, nearly white with several irregular, small, darker spots just anterior to the spinnerets on the venter.

Diagnosis. It is difficult to relate this species closely to any known species but its eyes, shape of the carapace and pedal spines seem to place it fairly close to *Oonops donaldi* Chickering. I believe that the features of the palp definitely establish it as a new species.

Records. Two male paratypes were taken in the same locality and on the same day as the holotype. The female is unknown.

***Oonops trapellus* sp. nov.**

Figures 27-29

Holotype. The male holotype is from Simla, Trinidad, W. I. April 19, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length nearly 1.75 mm (body somewhat curled). Carapace 0.79 mm long; 0.59 mm wide opposite interval between second and third coxae where it is widest; 0.32 mm tall opposite third coxae where it is tallest; rises from PME to highest point and then descends steeply to posterior border with a slight concavity about the middle of the declivity; in profile it appears much like that of *Oonops itascus* sp. nov.; surface smooth with a sparse covering of dark hairs. Eyes: six as usual; posterior row rather strongly recurved and occupies nearly entire width of carapace at that level (Fig. 27). Ratio of eyes ALE : PME : PLE = nearly 9 : 8.5 : 8. ALE separated from one another by nearly their diameter; separated from PME by a fairly broad line and are subcontiguous to PLE. PME contiguous to one another for fully one fourth of their circumference and separated from PLE by a fairly broad line. Height of clypeus obscure but probably somewhat less than the radius of ALE; pigment in ocular area with a reddish tint. Chelicerae: apparently typical of the genus; without special modifications. Maxillae: parallel; distal end probably divided but details undetermined because of fragility of holotype and scarcity of paratypes for dissection. Lip: apparently as usual in the genus, without special modifications. Sternum: scutiform; convex; not noticeably lobed or grooved; only slightly longer than wide between second coxae where it is widest but nearly as wide between first coxae; appears to be firmly united to lip; bluntly terminated just before bases of fourth coxae which are separated by considerably more than their width. Legs: 4213 in order of length; spines quite conspicuous

especially on first and second legs (Fig. 28). Palp: essential features shown in Figure 29; tarsal features quite distinctive. Abdomen: ovoid; without special modifications; epigastric and ventral scuta barely indicated. Color in alcohol: carapace light yellowish with pigment in ocular region as shown in Figure 27; legs like carapace above but lighter below; sternum very light yellowish and mouth parts essentially the same with some variations; abdomen nearly white.

Diagnosis. This species appears to be closely related to *Oonops itascus* sp. nov. from Trinidad, W. I. with relationships as indicated. The features of the palpal tarsus definitely establish it as a new species.

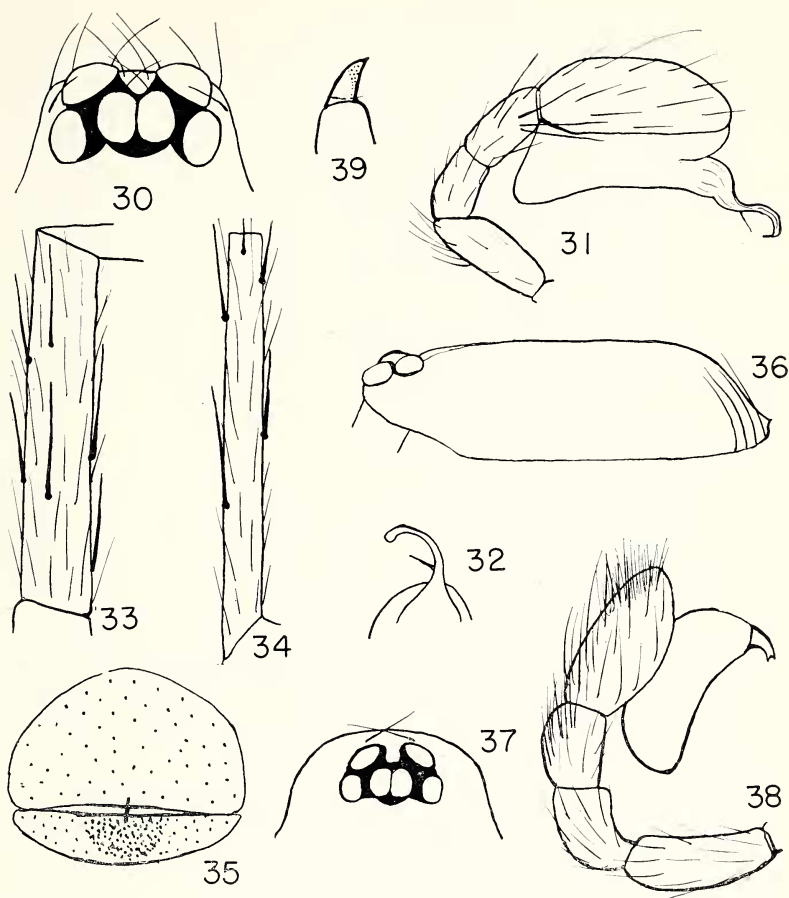
Records. One male paratype was taken with the holotype. The female is unknown.

***Oonops anoxus* sp. nov.**

Figures 30-35

Holotype. The male holotype is from Barro Colorado Island, Panama Canal Zone, May 17, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length 1.76 mm exclusive of the extended spinnerets; including these organs, total length is 1.91 mm. Carapace 0.79 mm long; 0.56 mm wide opposite second coxae where it is widest; nearly 0.30 mm tall; gently raised just behind PME and then nearly level along midline to beginning of moderately steep posterior declivity; surface smooth and shining; with a moderately well developed coat of dark hairs; with no evidence of a median thoracic groove or pit. Eyes: six as usual in a moderately compact group (Fig. 30); posterior row recurved and only a little wider than anterior row; posterior row occupies a little more than four-fifths of the width of the carapace at that level. Ratio of eyes ALE : PME : PLE = nearly 8.5 : 8 : 7. ALE separated from one another by slightly more than half their long axis; separated from PME by a little less than one-fourth of their long axis and from PLE by a narrow line. PME contiguous to one another for nearly one-third of their circumference and separated from PLE by nearly one-sixth of their long axis. Height of clypeus equal to nearly three-eighths of the long axis of ALE. Chelicerae, maxillae and lip all apparently quite typical of the genus; with no special modifications observed. Sternum: rather strongly elevated; longer than wide in ratio of nearly 5 : 4; slightly lobed along margins; rounded posterior



Figs. 30-35. *Oonops anoxus* sp. nov. Fig. 30. Eyes of male holotype from above, Fig. 31. Left palp of male holotype; prolateral view. Fig. 32. Tip of left palpal tarsus; ventral view. Figs. 33-34. Fourth tibia and metatarsus, respectively; prolateral views. Fig. 35. Epigynal area of female paratype from below. Figs. 36-39. *Oonops sativus* sp. nov. Fig. 36. Carapace of paratype male; left lateral side. Fig. 37. Eyes of male holotype from above. Fig. 38. Left palp of male holotype; prolateral view. Fig. 39. Tip of left palpal tarsus; nearly dorsal view.

end extended between fourth coxae which are separated by nearly their width; with a cluster of stiff bristles at posterior end and at each of the slightly indicated marginal lobes. Legs: 4123 in order of length; first and second legs seem to be without spines but third and fourth legs bear several spines especially on tibiae and metatarsi (Figs. 33-34). Palp: femur of moderate length; patella and tibia short and without special modifications; tarsus inflated and with embolus and accompanying spinule as shown in Figures 31-32; the position of the spinule seems to vary among the paratypes. Abdomen: ovoid in general; spinnerets slender and elongated; epigastric and narrow ventral scuta weakly outlined. Color in alcohol: carapace, sternum, legs and mouth parts yellowish with variations; black pigment in ocular region essentially as shown in Figure 30; abdomen nearly white in general but on the venter just anterior to the spinnerets are two groups of minute, brownish spots closely crowded together; the scuta are light yellowish.

Female paratype. Total length, exclusive of the extended spinnerets, 1.98 mm; including the spinnerets total length is 2.14 mm. Carapace 0.85 mm long; 0.64 mm wide opposite second coxae where it is widest; 0.33 mm tall; otherwise essentially as in male holotype. Eyes: six as usual in the genus. Ratio of eyes ALE : PME : PLE = nearly as in male; PME quite elongated and others with some irregularities in outline; ALE separated from one another by nearly their radius and separated from PME and PLE by a broad line. PME contiguous to one another for nearly one-third of their circumference and separated from PLE by a broad line. Height of clypeus nearly equal to one-fourth of the diameter of ALE. Chelicerae, maxillae and lip apparently typical of females of the genus. Sternum: essentially as in male. Legs: 4123 in order of length as in male holotype; spines apparently as in male but somewhat less obscure than in that sex; palpal spines numerous, especially on the tarsus. Abdomen: typical of females of the genus in general; spinnerets much extended, especially the posterior pair; epigynal area obscurely distinctive (Fig. 35).

Diagnosis. After repeated consideration I have concluded that I must regard this species together with four additional species as constituting a group somewhat clearly separated from others treated in this paper. The male palpal tarsus is closely similar to that of *Oonops chilensis* Chamberlin and Ivie, 1936 from Mexico. No minute spine was apparently seen near the base of the embolus in the Mexican species, however, and no mention was made of many other important features in that species.

Records. The described female paratype was taken with male paratypes on Barro Colorado Island, Panama Canal Zone, May 20-21, 1964. The specimens now assigned to this species were for some time considered to represent two different species but are now placed together. Males are now in the collection from the following localities: Balboa, Panama Canal Zone, August, 1936; Boquete, Panama, August 4-11, 1954; Panama Canal Zone Forest Preserve, Jan. 8, 1958 and Panama Canal Zone Summit Gardens, May 1964. Nineteen females are in the collection from Boquete, Panama, Aug. 4-11, 1954; some of these are probably immature and their status uncertain; one addition-female and immature females are in the collection from Barro Colorado Island. May 20-21, 1964.

***Oonops sativus* sp. nov.**

Figures 36-39

Holotype. The male holotype is from Simla, Trinidad, W. I., April 16, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length 1.3 mm. Carapace 0.59 mm long; 0.46 mm wide opposite interval between second and third coxae where it is widest; nearly 0.15 mm tall; lower than usual in the genus as observed in this study (Fig. 36); nearly level medially from PME to beginning of moderately steep posterior declivity; with a sparse supply of dark bristles and with a series of eight to ten long, slender spines along lateral margins of the posterior declivity and contiguous ventral border of the carapace; with no definite median fovea. Eyes: six as usual in a compact group; posterior row very moderately recurved and occupies only about half the width of the carapace at that level. Ratio of eyes ALE : PME : PLE = nearly 5 : 4 : 3.5. ALE separated from one another by a little more than their radius; separated from PLE by one-fifth of their diameter and from PME by a slightly greater distance. PME contiguous to one another for nearly one third of their circumference and subcontiguous to PLE. Clypeus obscure but probably somewhat less than diameter of ALE in height. Black pigment in ocular area essentially as shown in Figure 37. Chelicerae: vertical; parallel; moderately long and slender; without special modifications. Maxillae: moderately long and slender; slightly convergent; narrowed distally. Lip: nearly as wide at base as long; appears to be firmly united to sternum. Sternum: convex; with many stiff, dark bristles some of which are erect; not notably lobed; surface quite smooth; longer than wide

in ratio of nearly 4 : 3; bluntly terminated between bases of fourth coxae which are separated by a little more than their width; first and second coxae somewhat elongated; third coxae globose; fourth coxae moderately elongated. Legs: 4123 in order of length; long and slender spines are present on third and fourth legs but probably not on first and second; what have usually been designated as spiniform bristles might, by some araneologists, be regarded as very slender spines. Palp: femur of moderate length, not inflated; patella and tibia short; tarsus quite distinctive (Figs. 38-39). Abdomen: slender ovoid; with a rather coarse coat of dark hair somewhat concentrated at base; spinnerets typical of the genus; region of epigastric scutum appears to be lightly chitinized. Color in alcohol: carapace a medium dark yellowish with fine brownish streaks and dots from ocular region along broad lateral regions thus making a rather distinctive color pattern; legs yellowish above but somewhat lighter below; sternum and mouth parts like legs above with variations; abdomen nearly pure white.

Female paratype. Total length 1.63 mm. Carapace 0.61 mm long; 0.45 mm wide opposite posterior border of second coxae where it is widest; about 0.17 mm tall; otherwise essentially as in male. Eyes: ratio of eyes $ALE : PME : PLE = 4.5 : 4 : 3.5$; otherwise essentially as in male holotype. Chelicerae, maxillae and lip all essentially as in male holotype. Epigynal area appears to be completely lacking in distinctive features. Color in alcohol: almost exactly as in male holotype except that the brownish streaks and dots on the carapace are less conspicuous than in the male.

Diagnosis. This is the second of five species grouped together because thus far I have been unable to relate it closely to any other known species. The features of the ocular area, the shape of the carapace and the features of the male palp seem to establish it as a new species.

Records. The described female paratype was taken on the same day and in the same locality as the holotype. Several paratypes of both sexes were taken in the vicinity of Simla, Trinidad, W. I., in April, 1964.

Oonops sicorius sp. nov.

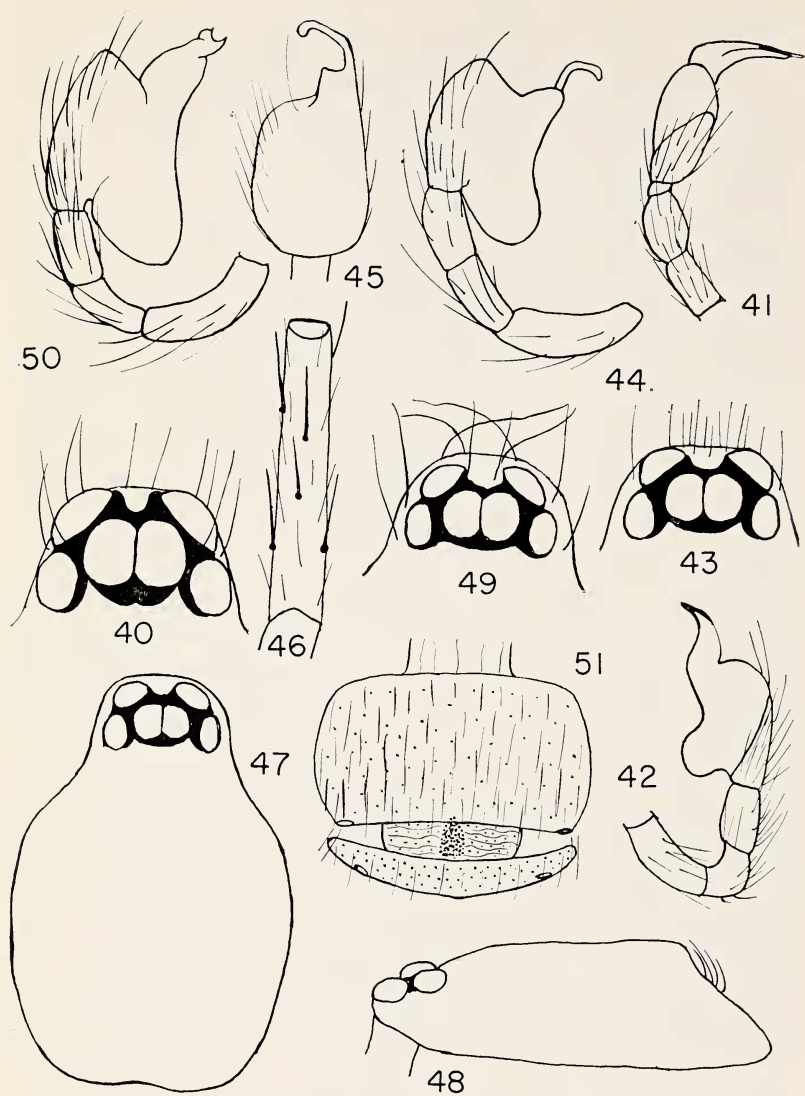
Figures 40-42

Holotype. The male holotype is from Fuik (Oostpunt), Curaçao, Nederlands Antilles, December 26, 1962; collected by Dr. and Mrs. H. W. Levi and B. de Jong. The name of the species is an arbitrary combination of letters.

Description. Total length 1.19 mm, exclusive of the extended spinnerets; including the spinnerets total length is 1.32 mm. Carapace 0.55 mm long; 0.45 mm wide opposite second coxae where it is widest; 0.26 mm tall; only slightly arched and only moderately raised from PME to beginning of steep posterior declivity opposite interval between second and third coxae; surface smooth with a moderate number of dark, stiff bristles. Eyes: six as usual and in a moderately compact group; posterior row moderately recurved and occupies practically the entire width of the carapace at that level (Fig. 40). Ratio of eyes ALE : PME : PLE = nearly 7 : 6.5 : 6. ALE separated from one another by nearly one-half their long axis; separated from PME only by nearly one-tenth of their long axis and nearly contiguous to PLE at one point. PME contiguous to one another for about one-fourth of their circumference and separated from PLE by a line. Apparently the clypeus is practically eliminated because the ALE are placed so low and because the margin of the carapace turns dorsally between these eyes. Chelicerae and lip appear to be typical of the genus and without special modifications. Maxillae: these appear to be divided distally to form tooth-like terminations; fragility of the holotype and lack of paratypes prevents more detailed observation. Sternum: strongly elevated; nearly as wide as long; surface smooth and shining; with numerous bristles the most conspicuous of which are clustered opposite the coxae and at the bluntly rounded posterior end between the bases of the fourth coxae which are separated by about their width. Legs: $41=23$ in order of length; no spines have been observed on first and second legs; the third and fourth legs bear a few spines; trichobothria have been observed on tibiae and metatarsi. Palp: all segments except the tarsus appear to be quite typical of males of the genus and without special modifications; the tarsus appears to be quite unusual among species studied in the preparation of this paper (Figs. 41-42). Abdomen: ovoid; 0.61 mm long, exclusive of the extended spinnerets; 0.37 mm wide; no scuta visible; spinnerets essentially typical of the genus. Color in alcohol: abdomen nearly white; all other parts light yellowish except the black pigment in the ocular area.

Diagnosis. It is difficult to relate this species directly to other species within the genus but it seems to belong with *Oonops anoxus* sp. nov. together with three other species as indicated in the appropriate descriptions. The features of the palp definitely establish it as a new species.

Records. There are no male paratypes and the female is unknown.



***Oonops tenebus* sp. nov.**

Figures 43-46

Holotype. The male holotype is from the Panama Canal Zone Forest Preserve, February 14, 1958. The name of the species is an arbitrary combination of letters.

Description. Total length, exclusive of the extended spinnerets, 1.39 mm; including the spinnerets total length is 1.49 mm. Carapace 0.68 mm long; 0.54 mm wide opposite second coxae where it is widest; nearly 0.26 mm tall; with no median thoracic groove observed; nearly level along median region from just behind PME to beginning of steep posterior declivity. Eyes: six as usual in a moderately compact group (Fig. 43); seen from above, posterior row recurved and occupies a little more than five-sixths of width of carapace at that level. Ratio of eyes ALE : PME : PLE = nearly 7.25 : 7 : 6. ALE separated from one another by nearly six-sevenths of their long axis; separated from PME by nearly two-sevenths of their long axis and nearly contiguous to PLE. PME contiguous to one another for about one-fourth of their circumference and separated from PLE by nearly one-fifth of their long axis. Clypeus difficult to observe but its height appears to be nearly three-sevenths of the long axis of ALE. Chelicerae: vertical; parallel; with no special modifications observed. Maxillae: convergent; considerably longer than lip; with no special modifications observed. Lip: essentially typical of the genus. Sternum: fragile, folded legs prevent the usual close observation; moderately elevated; longer than wide in ratio of nearly 4 : 3; extended just to bases of fourth coxae which are separated by nearly their width; with no lobes or grooves observed. Legs: 4123 in order of length; apparently only very few spines on first and second legs; third and fourth legs with numerous spines especially on tibiae and metatarsi (Fig. 46). Palp: femur of moderate length; patella and tibia short; tarsus inflated and with obscurely distinctive features (Figs. 44-45). Abdomen: essentially typical of

Figs. 40-42. *Oonops sicorius* sp. nov. Fig. 40. Eyes of male holotype from above. Figs. 41-42. Left palp of male holotype; nearly dorsal and nearly retrolateral views, respectively. Figs. 43-46. *Oonops tenebus* sp. nov. Fig. 43. Eyes of male holotype from above. Fig. 44. Left palp of male holotype; prolateral view. Fig. 45. Left palpal tarsus of male holotype; nearly ventral view. Fig. 46. Right fourth tibia of holotype; dorsal view. Figs. 47-51. *Oonops vestus* sp. nov. Figs. 47-48. Carapace of male paratype; from above and left lateral side, respectively. Fig. 49. Eyes of holotype from above. Fig. 50. Left palp of male holotype; prolateral view. Fig. 51. Epigynal area of described female paratype from below.

the genus; epigastric scutum barely discernible. Color in alcohol: carapace, legs, mouth parts and sternum all light yellowish with variations; considerable black pigment in ocular area; abdomen very light yellowish, almost white with faintly indicated reticulations; epigastric scutum faintly outlined.

Diagnosis. This is the fourth species which I have come to regard as worthy of a separate grouping. It is regarded as being more or less closely related to *Oonops anoxus* sp. nov. but greater clarity on this question must await further study of the genus. The features of the palp together with other features mentioned in the description seem to establish it quite definitely as a new species.

Records. Two male paratypes are in the collection from the Panama Canal Zone Forest Preserve, January, 1958 and Summit Gardens, Canal Zone, May, 1964. Two females were collected on the same day and in the same general locality as the male holotype; one of these may be the female of this species but it is not described here because of the uncertainty involved.

***Oonops vestus* sp. nov.**

Figures 47-51

Holotype. The male holotype is from Simla, Trinidad, W. I., April 25, 1964. The name of the species is an arbitrary combination of letters.

Description. Total length, exclusive of the somewhat extended spinnerets, 1.54 mm. Carapace 0.73 mm long; 0.54 mm wide opposite interval between second and third coxae where it is widest; nearly 0.26 mm tall opposite third coxae where it is tallest; rises gradually but only moderately from PME to beginning of steep posterior declivity (Figs. 47-48); with no definite median fovea; with numerous stiff hairs in ocular region and shorter dark hairs over lateral and posterior surfaces. Eyes: six as usual in a fairly compact group (Fig. 49); posterior row rather strongly recurved and occupies nearly four-fifths of width of carapace at that level. Ratio of eyes ALE : PME : PLE = nearly 7 : 6.5 : 6. ALE separated from one another by nearly five-sevenths of their long axis, subcontiguous to PLE and PME; PME contiguous to one another for more than one-fourth of their circumference and separated from PLE by nearly one-fourth of their long axis. Clypeus very narrow; height probably about equal to one-fourth of the long axis of ALE. Chelicerae, maxillae and lip apparently typical of the genus and without observed special modifications. Sternum: convex; smooth and

shining; with numerous stiff, dark colored hairs; posterior end with a tuft of stiff, dark colored hairs; nearly as wide as long; blunt posterior end extended somewhat between fourth coxae which are separated by nearly their width. Legs: 4123 in order of length; first and second legs with few spines but with many coarse hairs and bristles; third and fourth legs with several long, slender, transparent spines somewhat difficult to distinguish. Palp: with distinctive features essentially as shown in Figure 50; only tarsus with special modifications. Abdomen: ovoid; epigastric scutum slightly chitinized; typical in general of males of the genus. Color in alcohol: cephalothorax, legs and mouth parts yellowish with some variations; abdomen nearly white with three pairs of small, greenish spots on the venter just anterior to the spinnerets.

Female paratype. Total length 1.89 mm. Carapace 0.77 mm long; 0.55 mm wide; nearly 0.26 mm tall; otherwise essentially as in male. Eyes: ratio of eyes ALE : PME : PLE = nearly 6 : 6 : 5; otherwise essentially as in male. Chelicerae, maxillae, lip, sternum, legs and spines all essentially as in male; details regarded as unnecessary with paratype. Abdomen: essentially as in male except for the epigynal area and related scuta; with a weakly outlined epigastric scutum; just behind this scutum is a narrow, chitinized band apparently representing the ventral scutum; epigynal area obscurely distinctive (Fig. 51). Color in alcohol: essentially as in male in general; the dark, subsurface spots just anterior to the spinnerets are brownish in color.

Diagnosis. This is the last of the group of five species whose relationships to already known species has been difficult to determine. I believe that the features of the ocular area, the shape of the carapace, the features of the male palp and the epigynal area of the female establish it as a new species.

Records. The described female paratype was taken in the same locality and on the same day as the male holotype. A male and a female collected by Dr. N. A. Weber in Trinidad, W. I. but with no date indicated are now in the collection. In April, 1961 I collected three males and ten females in the vicinity of Simla, Trinidad, W. I.

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